

## SI-7 Combo: combination stunner and bleeder “Terminator”

**Seafood Innovations** offers the most humane and efficient method for stunning and bleeding of salmon/trout and many other fish species.

*A patented percussive stunning system is employed and is activated when the nose of the fish contacts a stainless steel retracting trigger plate. This in turn activates a sensor and allows either a pneumatic or electrical pulse to activate a circuit which mobilizes the striker piston which hits the fish's head at high speed causing it to be instantaneously and irreversibly stunned.*

The Autoflow Percussive Stunning and Bleeding System takes advantage of the fish's natural behaviour to lead them straight into a stunning unit, with the absolute minimum of stress to the fish - *Good welfare leads to good quality*. The benefits include:

1. Low stress harvesting results in a higher quality product as it causes muscle energy to be retained thereby keeping muscles pre-rigor longer, up to 24 hours post-harvest, and reduces the intensity or “stiffness” of rigor.
  - ✚ 20 – 30% better shelf life
  - ✚ Processing directly in line will reduce handling costs.
  - ✚ Faster processing will reduce yield loss.
  - ✚ Pre-rigor fillets have a better structure and colour.
2. No risk of hidden defects such as bloodspot or vertebral damage commonly associated with electro-stunning.
3. Recognized as one of the most humane methods of harvesting fish

### SI-7 Generation

The SI-7 is a new generation of pneumatic stunning and bleeding machines that are controlled electronically. The SI-7 is engineered to allow a number of simple modules to lock together for operation or separate for cleaning, servicing and routine maintenance. They are designed for compatibility of spare parts and service procedures between models.

The SI7 introduces electronic control and accurate operation with on-board programming via an EIMACC (*Electronic Integrated Management And Control Centre*). The electronic programming also allows additional features to guarantee the effectiveness of the stun and bleed as well as providing an auto-clearing function if a fish should be caught on a trigger.



The main control center is the MACHUB which provides the power supply with back-up for up to 10 operating units. It also allows the interface for remote on-line technical support, service monitoring and electronic adjustment if necessary. The MACHUB is the standard system used to power and monitor the SI-7 generation machines



The SI7 concept has now been extended to the **SI-7 combo** which has been designed to stun and bleed in the one hygienically-designed compact machine.

## Main features

The development of the combo has been specifically designed around the following points:

1. Compact size and lightweight
2. Maximizing Humane slaughter capability
3. Be able to improve/enhance the quality of harvested fish
4. Hygienic design/be easy clean
5. Require minimum down time for maintenance
6. Long intervals between routine servicing
7. Minimum use of consumables/low service and spareparts costs
8. Competitively priced
9. Worker health and safety

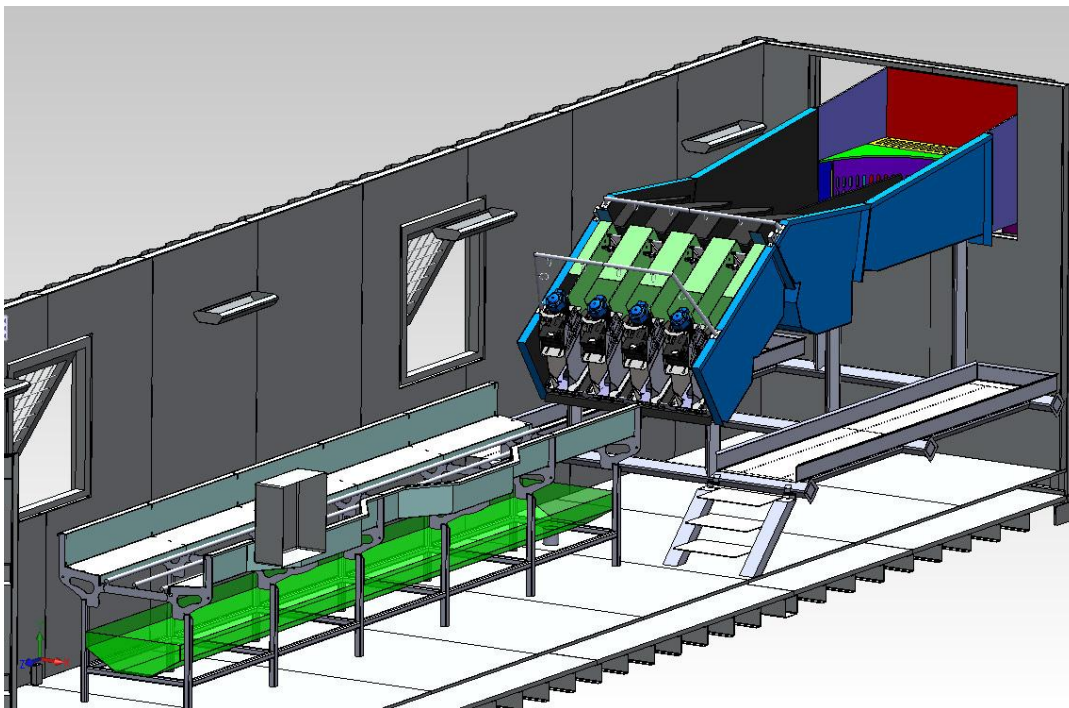


*4 channel combo unit under assembly*



*4 channel SI-7 combos mounted on a combination module, raised in cleaning position.*

This module is hinged at the front allowing for easy inspection, maintenance and cleaning. It is also designed to guide the fish optimally into the combos while collecting all blood water. It can be delivered in stainless steel, PE plastic or composite material.



*4 channel SI-7 combos with Autoflow fish delivery and a 5 m bleed table in a Seafood Innovations container solution.*

## Background: The SI-7 generation of machines:

### Benefits:

The main benefits come down to speed, efficiency, hygiene, reliability and reduced costs.

The SI-7 is faster (significantly), quieter and more effective than any other alternative on the market. It is approximately 20% faster than competing machines and requiring only 10% of the maintenance.

A 4 channel SI-7 combo has an average rate of 60 to 70 fish per minute with peak rates in excess of 100 fish per minute. Alternatively, manual feed of fish into the combos can be used to achieve up to 80 or more fish per minute with 4 channels and 2 operators.

### Reliability:

Installations using the SI-7 (both combo and separate stun/bleed machines) have been overwhelmingly positive, not only in regards to excellent stun and bleed rates but also to the minimal amount of servicing required.

#### Norway

- Salmar AS
- Mainstream
- Sinkaberg-Hansen AS
- Brandasund Fiskeforedling AS
- Wilsgård Fiskeoppdrett
- Jøkelfjord Laks AS (Aug 2011)
- Arnøy Laks AS (Aug 2011)
- Marine Harvest – Tauranga (Aug/Sept 2011)

#### Faroe Islands

- HiddenFjord - PF Luna
- Bakkafrost Harvest

#### Ireland

- Marine Harvest (Sept 2011)

#### Scotland

- Scottish Sea Farms

#### France

- Saumon France

#### Australia

- Huon Aquaculture Australia
- Tassal

**Reduced maintenance and service costs:**

As a result of innovative and simplified design, servicing costs are kept to a minimum. Components have been redesigned for durability and strength; materials of construction are stainless steel, high density plastics and nickel plate

**Accurate electronic control:**

The control of the machine operation is through an integrated EIMACC. This not only allows for accurate and reliable operation of the machines but also provides the opportunity to monitor the status of the machines and optimize maintenance processes and service schedules.

**Reduced noise:**

Ramp noise is eliminated through design and considered use of materials and control systems. Power head noise is substantially reduced through advanced cushioning and reset noise eliminated through exhaust suppression.

**Power:**

Increased power with operation from 4 bar to guarantee bleed efficacy and stunning efficiency with larger fish and substantially better results with matures.

**Size range:**

Size range has been increased to 8 + kg without the addition of complexity through innovation in design and increased power and stroke.

**Hygiene:**

The combo is comprised of simplified interlocking modules to minimize difficult to clean areas and “potential bacteria traps”. All the major components of the combo can be dismantled in less than 1 minute to allow for through cleaning and sanitizing.

**Product quality:**

- Accurate stunning/cutting greatly reduces the risk of fillet damage
- Retracting trigger system to enhance flow-through operation efficiency
- Auto-clear function assists operator work load

**Master Counter**

The Master Counter provides valuable information about the efficiency of the system and operation of the new machines and the counts and rates can be transmitted to the well boat to allow greater control from the supply side.

